



2023 APQC Schedule

Sunday, October 1st
Welcome Reception

6:00 - 8:00pm	Registration/Welcome Reception (Ridgeline Hotel)
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Monday, October 2nd

Calibration and Control

7:00 - 8:45am	Breakfast and Registration
8:45 - 9:00am	Welcome and Workshop Overview
9:00 - 10:00am	Akel Hashim (invited), “Predictable and unpredictable in quantum computing: finding structure from randomness”
10:00 - 10:15am	Coffee break
10:15 - 10:45am	Nathan Miller, “Feedback-based calibration for rapid tuning and drift control of quantum processors”
10:45 - 11:15am	Andreas Bengtsson, “Measuring and optimizing readout errors in large superconducting quantum processors”
11:15 - 11:45am	John Paul Marceaux, “Dual control techniques for real-time calibration of quantum processors”
11:45am - 1:00pm	Lunch (perspective talk by Claire Cramer, DOE Office of Science)
1:00 - 2:00pm	Michael Gullans (invited), “Benchmarking noisy quantum processors via random sampling experiments”
2:00 - 2:30pm	Coffee break
2:30 - 3:00pm	Evangelos Piliouras, “Space Curve Quantum Control: A robust gate design framework”
3:00 - 3:30pm	Kenneth Rudinger, “Calibrating Two-Qubit Gates with Robust Phase Estimation”
3:30 - 4:00pm	Jiwon Yun, “High-fidelity quantum control of an electron-nuclear spin register”
4:00 - 4:15pm	Coffee break
4:15 - 5:15pm	Anurag Saha Roy, “Software tools for reinforcement learning based automated, adaptive and scalable characterisation of QPUs”
5:15 - 6:00pm	Poster setup
6:00 - 7:30pm	Dinner, including “Dinner with an expert” groups
7:30 - 9pm	Poster session



Tuesday, October 3rd

Software for Quantum Computer Performance Assessment

7:00 - 8:30am	Grab & Go Breakfast (burritos & coffee)
8:30 - 2:45pm	Hiking/Collaboration Free Day
2:45 - 3:15pm	Coffee break
3:15 - 3:45pm	Yuval Baum (Q-CTRL), <i>“Using machine learning for predictive QCVV”</i>
3:45 - 4:15pm	Stefan Seritan (Sandia), <i>“pyGSTi: a software package for quantum characterization and benchmarking”</i> (possibly virtual)
4:15 - 4:45pm	Coffee break
4:45 - 5:15pm	Chris Wood (IBM), <i>“Benchmarking quantum computers with Qiskit runtime primitives”</i>
5:15 - 5:45pm	Aarthi Sundaram (Microsoft), <i>“Assessing requirements to scale to practical quantum advantage”</i>
5:45 - 6:15pm	Tom Lubinski (Quantum Circuits), <i>“Enabling application performance exploration using the QED-C quantum computing benchmark framework”</i> (virtual)
6:30 - 8:00pm	Dinner, including “Dinner with an expert” groups



Wednesday, October 4th
Gate characterization and quantum error correction

7:00 - 8:30am	Breakfast
8:30 - 9:30am	Riddhi Gupta (invited) , “Encoding a magic state with beyond break-even fidelity”
9:30 - 10:00am	Maximilian Rimbach-Russ, “Towards high-fidelity semiconducting spin qubits”
10:00 - 10:45am	Coffee break
10:45 - 11:15am	Anton Frisk Kockum, “Quantum state and process tomography with machine learning and gradient descent”
11:15 - 11:45am	Gabriel Samach, “Lindblad tomography of a superconducting quantum processor”
11:45am - 12:15pm	Corey Ostrove, “Characterizing quasistatic noise in quantum processors”
12:15 - 1:30pm	Lunch (perspective talk by Joseph Emerson & Adriaan Rol)
1:30 - 2:30pm	Charlie Baldwin (invited)
2:30 - 3:00pm	Coffee break
3:00 - 3:30pm	Cassandra Granade, “Enabling single-shot characterization protocols with QIR” (virtual)
3:30 - 4:00pm	Alex Kwiatkowski, “Optimized experiment design and analysis for fully randomized benchmarking”
4:00 - 4:30pm	--- Group Photo ---
4:30 - 5:45pm	Panel discussion, “Assessing quantum performance en route to FTQC”
6:00 - 8:00pm	Banquet Dinner



Thursday, October 5th
Benchmarking and Scalable Characterization

7:00 - 8:30am	Breakfast
8:30 - 9:30am	Dripto Debroy (invited), “<i>Suppressing quantum errors by scaling a surface code logical qubit</i>”
9:30 - 10:00am	Andrew Guo, “ <i>Partial characterization of quantum gates using character phase estimation</i> ”
10:00 - 10:30am	Coffee break
10:30 - 11:00am	Timothy Proctor, “ <i>Learning the capabilities of quantum computers using custom neural networks</i> ”
11:00 - 11:30am	Senrui Chen, “ <i>The learnability of Pauli noise</i> ”
11:30am - 12:00pm	Joseph Emerson, “ <i>From cycle error reconstruction to circuit benchmarking</i> ”
12:00 - 1:15pm	Lunch
1:15 - 2:15pm	Jordan Hines (invited), “<i>Randomized benchmarking into the quantum advantage regime</i>”
2:15 - 2:45pm	Coffee break
2:45 - 3:15pm	Daniel Hothem, “ <i>Scalable randomized benchmarking with mid-circuit measurements</i> ”
3:15 - 3:45pm	Seth Merkel, “ <i>Intermediate scale benchmarking at IBM Quantum</i> ”
3:45 - 4:15pm	John Gamble, “ <i>Benchmarking a trapped-ion quantum computer with 29 algorithmic qubits</i> ”
4:15 - 4:30pm	Parting words
4:30pm	Adjourn